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EXAMINER

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte TADASHI TAMURA

Appeal 2014-003889
Application 11/926,251
Technology Center 3700

Before LYNNE H. BROWNE, ANNETTE R. REIMERS, and
ERIC C. JESCHKE, *Administrative Patent Judges*.

REIMERS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Tadashi Tamura (Appellant) appeals under 35 U.S.C. § 134(a) from the Examiner's decision to reject claims 7–15 and 25–33 under 35 U.S.C. § 103(a) as unpatentable over Bakircioğlu (US 6,733,454 B1; iss. May 11, 2004) and Dias (US 5,152,291; iss. Oct. 6, 1992). Claims 1–6 and 16–24 have been canceled. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE and enter a NEW GROUND OF REJECTION pursuant to our authority under 37 C.F.R. § 41.50(b).

CLAIMED SUBJECT MATTER

The claimed subject matter “relate[s] to methods and systems for spectral images.” Spec. ¶ 2, Fig. 1. Claims 7 and 25 are independent.

Claim 7 is illustrative of the claimed subject matter and recites:

7. A processor-implemented method of determining a pulse repetition frequency for an ultrasound system comprising:

receiving a Doppler frequency spectrum signal over time;

calculating maximum frequencies f_{max} from the Doppler frequency spectra;

calculating minimum frequencies f_{min} from the Doppler frequency spectra;

tracking the maximum f_{max} and minimum f_{min} frequencies over time;

capturing a highest value *high* f_{max} of the maximum f_{max} frequencies and a lowest value *low* f_{min} of the minimum f_{min} frequencies tracked;

comparing the highest value *high* f_{max} and the lowest value *low* f_{min} to determine whether the maximum f_{max} frequencies and minimum f_{min} frequencies are bipolar, or negative or positive unipolar;

if bipolar:

determining a frequency span based on a difference between the highest maximum frequency *high* f_{max} and lowest minimum frequency *low* f_{min} ;

comparing the frequency span to a current PRF setting value;

if the frequency span is greater than the current PRF setting value, increasing the PRF setting value and outputting the increased PRF setting value to a PRF generator;

if the frequency span is less than a predetermined fraction of the current PRF setting value, decreasing the PRF setting value and outputting the decreased PRF setting value to the PRF generator; and

if the frequency span is less than the current PRF setting value but greater than the predetermined fraction of the current PRF, using the current PRF setting value;

if positive unipolar:

comparing the highest maximum frequency *high* f_{max} with a current positive maximum frequency limit $b_1 f_{PRF}$, wherein if the highest maximum frequency *high* f_{max} is greater than the current positive maximum frequency limit $b_1 f_{PRF}$ the current PRF setting value is increased to a setting corresponding to the highest maximum frequency *high* f_{max} and the increased PRF setting value is output to the PRF generator;

if the highest maximum frequency *high* f_{max} is less than a current positive maximum frequency limit $b_1 f_{PRF}$, comparing the highest maximum frequency *high* f_{max} with a low level threshold $b_2 b_1 f_{PRF}$, wherein if the highest maximum frequency *high* f_{max} is less than the low level threshold $b_2 b_1 f_{PRF}$, the PRF is decreased until equal to the highest maximum frequency *high* f_{max} and the decreased PRF setting value is output to the PRF generator; and
if negative unipolar:

comparing the absolute value of the lowest minimum frequency *low* f_{min} with the absolute value of a current negative maximum frequency limit $-(1-b_1) f_{PRF}$, wherein if the absolute value of the lowest minimum frequency *low* f_{min} is greater than the absolute value of the current negative maximum frequency limit $-(1-b_1) f_{PRF}$, the current PRF setting value is increased to a setting corresponding to the absolute value of the lowest minimum frequency *low* f_{min} and the increased PRF setting value is output to the PRF generator;

if the absolute value of the lowest minimum frequency *low* f_{min} is less than the absolute value of the current negative maximum frequency limit $-(1-b_1) f_{PRF}$, comparing the absolute value of the lowest minimum frequency *low* f_{min} with the absolute value of a low level threshold $-b_2(1-b_1) f_{PRF}$, wherein if the absolute value of the lowest minimum frequency *low* f_{min} is less than the absolute value of the low level threshold $-b_2(1-b_1) f_{PRF}$, the PRF is decreased to equal the absolute value of the lowest minimum frequency *low* f_{min} and the decreased PRF setting value is output to the PRF generator.

ANALYSIS

The Examiner finds that “one of ordinary skill in the art *would* find that the cited portions [of Bakircioğlu and Dias] clearly and/or obviously convey the features of the present claims pertaining to setting pulse repetition frequency if maximum and minimum frequencies are bipolar, negative unipolar, or positive unipolar.” Ans. 10; *see also* Non-Final Act. 3–6, 8. We disagree.

At the outset, we agree with Appellant that the Examiner fails to address Appellant’s contentions in the Answer. *See* Reply Br. 2–3; *see also* Ans. 9–11; Appeal Br. 8–11. In particular, the Examiner fails to address Appellant’s contention that (1) the portions of Bakircioğlu cited by the Examiner fail to disclose “specific” limitations of claim 7; and (2) the Examiner fails to “provide any explanation” as to how the graph of Dias remedies the noted deficiencies. *See* Reply Br. 2–3; *see also* Ans. 9–11; Appeal Br. 8–11.

In this case, Bakircioğlu merely discloses the terms “bipolar and unipolar” in a general statement regarding beamformer 14. *See* Bakircioğlu, 3:50–53 (“The beamformer **14** includes a transmit beamformation [sic] components, such as one or more waveform generators, memories or other devices for generating a unipolar, bipolar or complex waveform.”). As such, we disagree with the Examiner that “Bakircioglu provides a clear teaching of the features in question (e.g.: teachings for ‘bipolar,’ ‘positive unipolar,’ and ‘negative unipolar,’ features).” Ans. 9; *see also* Appeal Br. 8–10; Reply Br. 3. Additionally, the Examiner relies on Dias merely to “provide[] a teaching of a relationship between Doppler frequency and blood flow velocity (**FIG. 5**, a graph, depicts the relationship).” Non-Final Act. 3; *see also* Ans. 10;

Appeal Br. 11. Given that Bakircioğlu merely discloses a general statement about devices for generating a unipolar or bipolar waveform, the Examiner fails to provide sufficient evidence or technical reasoning to “explain” how a relationship between Doppler frequency and blood flow velocity in the graph of Figure 5 of Dias “supports” Bakircioğlu in disclosing the specific limitations of claim 7. *See* Non-Final Act. 3–6; *see also* Ans. 7–11; Appeal Br. 8–11; Reply Br. 2–3.

Independent claim 25 is directed to a system to determine a pulse repetition frequency for an ultrasound system and includes language similar to that discussed above for claim 7. *See* Appeal Br. 16–17, App. A – Claims. The Examiner relies on similar unsupported findings and conclusions for claim 25 as those discussed above for claim 7. *See* Non-Final Act. 7. Thus, the Examiner’s findings and conclusions with respect to Bakircioğlu and Dias are deficient for claim 25 as well.

Accordingly, for the foregoing reasons, we do not sustain the Examiner’s rejection of claims 7–15 and 25–33 as unpatentable over Bakircioğlu and Dias.

New Ground of Rejection

Claims 7–15 and 25–33 are rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter.

The Supreme Court has set forth “a framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts.” *Alice Corp. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2355 (2014) (citing *Mayo Collaborative Servs. v. Prometheus Labs, Inc.*, 132 S. Ct. 1289, 1294 (2012)). According to the Supreme Court’s framework, we must first

determine whether the claims at issue are directed to one of those concepts (i.e., laws of nature, natural phenomena, and abstract ideas). *Id.* If so, we must secondly “consider the elements of each claim both individually and ‘as an ordered combination’ to determine whether the additional elements ‘transform the nature of the claim’ into a patent-eligible application.” *Id.* The Supreme Court characterizes the second step of the analysis as “a search for an ‘inventive concept’ — i.e., an element or combination of elements that is ‘sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.’” *Id.* (alteration in original).

Independent claims 7 and 25 are directed to an information processing method and system, respectively, comprising a processor configured to collect and analyze data. In other words, the independent claims are directed to a set of rules performed by a computer (i.e., software).

Our reviewing court instructs us that “[s]oftware can make non-abstract improvements to computer technology just as hardware improvements can, and sometimes the improvements can be accomplished through either route.” *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335 (Fed. Cir. 2016). We are further instructed that we must determine if “the claims are directed to an improvement to computer functionality versus being directed to an abstract idea, even at the first step of the *Alice* analysis.” *Id.* Here, the limitations at issue are not directed to an improvement of a computer’s functionality. Accordingly, the independent claims are directed to an abstract idea.

Having determined that the independent claims are directed to an abstract idea, we must determine whether the additional elements of the

independent claims transform them into patent-eligible subject matter. Although the independent claims set forth specific data to be collected and analyzed, indicate that an algorithm is to be used to manipulate the collected data, and indicate that the collected data is used to make determinations, they do not indicate what use is made of the result obtained. As such, the independent claims at most require only “mathematical algorithms to manipulate existing information to generate additional information.” *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344, 1351 (Fed. Cir. 2014). Thus, the limitations of these claims do not transform the abstract ideas embodied in the claims. Rather, they simply implement those ideas.

The independent claims, when considered “both individually and ‘as an ordered combination,’” amount to nothing more than an attempt to patent the abstract ideas embodied in the steps of these claims. *See Alice*, 134 S. Ct. at 2355 (quoting *Mayo*, 132 S. Ct. at 1298). Accordingly, the limitations of the independent claims fail to transform the nature of these claims into patent-eligible subject matter. *See id.* (citing *Mayo*, 132 S. Ct. at 1297, 1298). The dependent claims do not transform the subject matter of the independent claims for similar reasons, and thus, are not directed to patent-eligible subject matter as well.

DECISION

We REVERSE the decision of the Examiner to reject claims 7–15 and 25–33 as unpatentable over Bakircioğlu and Dias.

We enter a NEW GROUND OF REJECTION of claims 7–15 and 25–33 under 35 U.S.C. § 101.

This decision contains new grounds of rejection pursuant to 37 C.F.R. § 41.50(b). Section 41.50(b) provides “[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review.” Section 41.50(b) also provides:

When the Board enters such a non-final decision, the Appellant, within two months from the date of the decision, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:

(1) *Reopen prosecution.* Submit an appropriate amendment of the claims so rejected or new Evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the prosecution will be remanded to the examiner. The new ground of rejection is binding upon the examiner unless an amendment or new Evidence not previously of Record is made which, in the opinion of the examiner, overcomes the new ground of rejection designated in the decision. Should the examiner reject the claims, appellant may again appeal to the Board pursuant to this subpart.

(2) *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board upon the same Record. The request for rehearing must address any new ground of rejection and state with particularity the points believed to have been misapprehended or overlooked in entering the new ground of rejection and also state all other grounds upon which rehearing is sought.

Further guidance on responding to a new ground of rejection can be found in the Manual of Patent Examining Procedure § 1214.01.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

REVERSED; 37 C.F.R. § 41.50(b)